Credit Name: CSE 2110 Procedural Programming 1
Assignment Name: Metric Conversion Mastery
How has your program changed from planning to coding to now? Please explain?

PLANNING:

I plan to create a main method that will link the conversion options 1-8 (in a separate method), and user will be prompted to choose one of the 8 conversions. If the choice is valid, then the user will be prompted to enter a value to be converted. The resulting value will be calculated using a separate method. Finally, the resulting value will be printed.

CODING:

1.

```
public static void main(String[] args) {
    //prepare scanner for user input
       Scanner input = new Scanner(System.in);

      // initialize int choice
       int choice = 0;

       //While loop until user decides to exit by choosing option 9.
       while (choice != 9) {

           // display Menu method
           displayMenu();
```

Scanner if prepared for user input
Int choice is declared
While loop makes sure code re-runs until user wishes to exit manually
Display Menu method is then shown, giving the user conversion options to choose from, as well as an exit option, number 9.

2.

```
public static void displayMenu() {

    // Program prompts the user for which conversion they wish to choose.

    System.out.println("Metric Conversion Menu:");
    System.out.println("1. inches to centimeters");
    System.out.println("2. centimeters to inches");
    System.out.println("3. feet to centimeters");
    System.out.println("4. centimeters to feet");
    System.out.println("5. yards to meters");
    System.out.println("6. meters to yards");
    System.out.println("7. miles to kilometers");
    System.out.println("8. kilometers to miles");
    System.out.println("9. Exit");
    System.out.print("Choose an option 1-9: ");
  }
```

displayMenu method: prints the conversion menu with inches to centimeters, feet to centimeters, yards to metres, miles to km, and vise versa. It also gives the exit option number 9 which ends the program.

3.

```
//user input number is set at the "choice" variable
choice = input.nextInt();

//if statement checks if choice is valid
if (choice >= 1 && choice <= 8) {

prompt user for conversion value
 System.out.print("Enter value: ");


 // user input conversion value set as double value
 double value = input.nextDouble();
```

Once user picks an number 1-8 (not 9) it is stored in the choice variable
If statement makes sure that the choice is 1-8.
Prompts user for the value to be converted, and it is stored in the double value

4.

```
 // if the user wants to exit and they choose option 9
 else if (choice ==9) {
     System.out.println("Thanks for using The Program!");
 }
 // if there is an error while user inputs a choice
 else {
     System.out.print("Error, please enter a valid choice. ");
 }
```

If the choice is 9, the thank you message is displayed and the program ends.
If the choice is not 1-9, the error message is displayed and the program is re-run.

5.

```
// convert method is used along with the choice, and value both entered by user
   double result = convert(choice, value);
```

Convert method is attached in the main method, along with the user choice and entered value. It is stored in the variable result.

6.

```java
// convert method using a switch for the calculations
   public static double convert(int choice, double value) {

    switch (choice) {
    case 1: return value * 2.54; // inch to centi
    case 2: return value / 2.54; //centi to inch
    case 3: return value * 30.48; // feet to centi
    case 4: return value / 30.48; // centi to feet
    case 5: return value * 0.9144; // yard to meter
    case 6: return value / 0.9114; // meter to yard
    case 7: return value * 1.6093; // mile to kilometer
    case 8: return value / 1.6093; // kilometer to mile
        default: return 0; // default case
```

This is the convert method which takes the user's value and converts it into which ever choice number they selected. I used a switch statement to calculated the various conversions, 1-8.

7.

```java
//display result to the user
   System.out.println("Result: " + result);
```

Once the resulting value is calculated with the convert method, it is then printed.

End of Program!